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EXAMINER	
MCCLELLAND, KIMBERLY KEIL	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/511,699	DOI ET AL.	
	Examiner	Art Unit	
	KIMBERLY K. MCCLELLAND	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *36 and 38-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *36 and 38-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant is reminded they need to explicitly point out where support for all the newly claimed features comes from as required by MPEP 714.02 and 2163.06. See 37 CFR 1.111.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 36 and 38-51 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation of an "at least substantially" uncured pressure sensitive adhesive layer appears to be new matter. Support for this claim language could not be located in the current specification. The drawings do not provide support for an "at least substantially" uncured adhesive layer. Clarification is required.

4. The term "at least substantially" in claim s 36 and 38-51 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one

of ordinary skill in the art would not be reasonably apprised of the scope of the invention. How is the degree of cure ascertained? What range of a cured state is considered "at least substantially"? Clarification is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 36, 38-39, 41-43, 45, and 47-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT Publication No. WO02/084631 as evidenced by corresponding U.S. Patent No. 6,872,635 to Hayashi et al. in view of U.S. Patent No. 5,426,342 to Nakamura et al. and U.S. Patent No. 6,613,610 to Iwafuchi et al.

7. With respect to claim 36, Hayashi et al. discloses embedding a plurality of first devices (8) into a substantially uncured adhesive layer (7) provided on a first substrate (6); embedding a plurality of second devices (3) arranged on a second substrate into a substantially uncured adhesive layer (7) provided on the first substrate (6) by positioning the first and second substrates in close proximity thereof such that the plurality of second devices arranged on the second substrate penetrate the surface of the uncured pressure sensitive adhesive layer (See paragraph 0126); and stripping the plurality of second devices from the first substrate thereby holding the other-side devices in an embedded states in the uncured adhesive layer (See Figures 1-25) wherein the first

devices and second devices are light emitting diodes having different characteristics (See paragraph 0170). Hayashi et al. discloses stripping the second substrate prior to cooling the adhesive to room temperature, when the adhesive is cured completely (See paragraph 0226). However, Hayashi et al. does not specifically disclose using pressure sensitive adhesive or stripping the plurality of second devices from the second substrate while the pressure sensitive adhesive layer is in a substantially uncured state thereby holding the plurality of first and second devices in an embedded state within the uncured pressure sensitive adhesive layer.

8. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

9. Iwafuchi et al. discloses a similar device transfer method, including a specific recitation of curing the adhesive surface of the transfer substrate after devices have been transferred (column 27, lines 40-45; column 31, lines 54-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the sequence of steps taught in Iwafuchi et al. of transferring the devices prior to heat/light curing the adhesive layer in the method of Hayashi et al. The motivation would have been to improve ease of separation between the first and second substrate.

It would have been obvious to use a known sequence of device transfer to improve a similar method, by allowing for clean removal of the second substrate from the second substrate in the same way. The combination of prior art elements of a sequence of the stripping of a second substrate and curing an adhesive layer used in a device transfer method would have yielded the predictable result of transferring devices from a second substrate to a first substrate without damaging the devices.

10. As to claim 38, Hayashi et al. discloses the one-side (8) devices and the plurality of first devices (3a) and the plurality of second devices are held in the embedded state in different areas on the substrate (See Figures 1-25).

11. As to claim 39, Hayashi et al. discloses embedding devices (42) arranged on a first substrate (41) into a substantially uncured pressure sensitive adhesive layer (45) provided on a second substrate (43) by positioning the first and second substrates in close proximity thereof such that the devices arranged on the first substrate penetrate the surface of the uncured pressure sensitive adhesive layer, the pressure sensitive adhesive being in a substantially uncured state (See Figures 1-25); wherein the devices are light emitting diodes (See paragraph 0170); stripping the devices from the first substrate thereby holding the devices in an embedded state in the pressure sensitive adhesive layer (See Figures 1-25), and hardening the uncured adhesive layer to cure the pressure sensitive adhesive (See paragraph 0226); forming first electric wirings (46) on the adhesive layer, adhering a third substrate (47) onto a side on which the first electric wirings are formed of the adhesive layer, and stripping the second substrate and the adhesive layer from each other (See Figures 1-25); and providing adhesive layer

with openings (65, See Figures 1-25) reaching the devices, filling the openings with a conductive material (49), and forming second electric wirings (63, 64) on the adhesive layer. Hayashi et al. discloses stripping the first substrate prior to cooling the adhesive to room temperature, when the adhesive is cured completely (See paragraph 0226). However, Hayashi et al. does not specifically disclose using pressure sensitive adhesive or stripping the devices from the first substrate while the pressure sensitive adhesive layer is in a substantially uncured state thereby holding the plurality of first and second devices in an embedded state within the uncured pressure sensitive adhesive layer.

12. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

13. Iwafuchi et al. discloses a similar device transfer method, including a specific recitation of curing the adhesive surface of the transfer substrate after devices have been transferred (column 27, lines 40-45; column 31, lines 54-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the sequence of steps taught in Iwafuchi et al. of transferring the devices prior to heat/light curing the adhesive layer in the method of Hayashi et al. The motivation would have been to improve ease of separation between the first and second substrate.

It would have been obvious to use a known sequence of device transfer to improve a similar method, by allowing for clean removal of the second substrate from the second substrate in the same way. The combination of prior art elements of a sequence of the stripping of a first substrate and curing an adhesive layer used in a device transfer method would have yielded the predictable result of transferring devices from a second substrate to a first substrate without damaging the devices.

14. As to claim 41, Hayashi et al. discloses embedding a plurality of first devices (42) arranged on a first substrate (41) into a substantially uncured adhesive layer (45) provided on a second substrate (43) by positioning the first and second substrates in close proximity thereof such that the plurality of first devices arranged on the first substrate penetrate the surface of the uncured pressure sensitive adhesive layer (See Figures 1-25), and stripping the plurality of first devices from the first substrate thereby holding the plurality of first devices in an embedded state in the adhesive layer (See Figures 1-25); further embedding a plurality of second devices arranged on the first substrate into the uncured adhesive layer (See paragraph 0170) by positioning the first and second substrates in close proximity thereof such that the plurality of second devices arranged on the first substrate penetrate the surface of the uncured adhesive layer (See Figures 1-25), and stripping the plurality of second devices from the first substrate thereby holding the plurality of second devices (62) in an embedded state in the adhesive layer (See paragraph 0226); hardening the pressure sensitive adhesive layer to cure the adhesive layer where the plurality of first devices and the plurality of second devices are held in the embedded and cured state within the pressure sensitive

adhesive layer (See paragraph 0157); forming first electric wirings on the adhesive layer (46), adhering a third substrate (47) onto the side on which the first electric wirings are formed of the adhesive layer, and stripping the second substrate and the adhesive layer from each other (See Figures 1-25); and providing the adhesive layer with openings reaching the plurality of first devices or the plurality of second devices, filling the openings with a conductive material (49), and forming second electric wirings on the adhesive layer (63, 64, See Figure 16), wherein the first devices and second devices are light emitting diodes (See paragraph 0170). Hayashi et al. discloses stripping the first substrate prior to cooling the adhesive to room temperature, when the adhesive is cured completely (See paragraph 0226). However, Hayashi et al. does not specifically disclose using pressure sensitive adhesive or stripping the plurality of second devices from the second substrate while the pressure sensitive adhesive layer is in a substantially uncured state thereby holding the plurality of first and second devices in an embedded state within the uncured pressure sensitive adhesive layer.

15. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53). Therefore, it would have been

obvious to combine Nakamura et al. with Hayashi et al. which would obtain the invention as disclosed in claim 41.

16. Iwafuchi et al. discloses a similar device transfer method, including a specific recitation of curing the adhesive surface of the transfer substrate after devices have been transferred (column 27, lines 40-45; column 31, lines 54-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the sequence of steps taught in Iwafuchi et al. of transferring the devices prior to heat/light curing the adhesive layer in the method of Hayashi et al. The motivation would have been to improve ease of separation between the first and second substrate. It would have been obvious to use a known sequence of device transfer to improve a similar method, by allowing for clean removal of the second substrate from the second substrate in the same way. The combination of prior art elements of a sequence of the stripping of a first substrate and curing an adhesive layer used in a device transfer method would have yielded the predictable result of transferring devices from a second substrate to a first substrate without damaging the devices.

17. As to claim 42, Hayashi et al. discloses the plurality of first devices and the plurality of second devices have different characteristics (See paragraph 0170).

18. As to claim 43, Hayashi et al. discloses plurality of first devices and the plurality of second devices are held in the embedded state in different areas on the second substrate (See Figures 1-25).

19. As to claim 45, Hayashi et al. discloses one of the plurality of first devices and the plurality of second devices are any one of display devices and driving circuit devices (see paragraph 0170).

20. As to claim 47, Hayashi et al. discloses bringing the plurality of second devices into contact with a temporary adhesion layer provided on the second substrate for temporarily adhering the other side devices to the temporary adhesion layer thereby arranging the devices on the second substrate, before embedding the plurality of second devices into the uncured adhesive layer provided on the first substrate (See Figures 1-25). However, Hayashi et al. does not disclose using pressure sensitive adhesive.

21. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

22. As to claim 48, Hayashi et al. discloses a tack of the pressure sensitive adhesive layer provided on the first substrate is greater than a tack of the temporary adhesion layer provided on the second substrate, as shown by the transfer of devices from the temporary adhesion layer to the adhesive layer (See Figures 1-25). However, Hayashi et al. does not disclose using pressure sensitive adhesive.

23. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

24. As to claim 49, Hayashi et al. discloses tack of at least one of the uncured adhesive layer and the temporary adhesion layer is changed so that the tack of the uncured adhesive layer will be greater than the tack of the temporary adhesion layer (i.e. thermally cure; See paragraph 0187). However, Hayashi et al. does not disclose using pressure sensitive adhesive.

25. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

26. As to claim 50, Hayashi et al. discloses curing the uncured adhesive layer using a heating treatment (i.e. thermosetting; See paragraph 0187). However, Hayashi et al. does not disclose using pressure sensitive adhesive.

27. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

28. As to claim 51, Hayashi et al. discloses the adhesive layer is hardened after stripping the devices from the first substrate (i.e. "certainly fixed"; See paragraph 0226). However, Hayashi et al. does not disclose using pressure sensitive adhesive, or the uncured adhesive layer is hardened after stripping the devices.

29. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

30. Iwafuchi et al. discloses a similar device transfer method, including a specific recitation of curing the adhesive surface of the transfer substrate after devices have been transferred (column 27, lines 40-45; column 31, lines 54-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine

the sequence of steps taught in Iwafuchi et al. of transferring the devices prior to heat/light curing the adhesive layer in the method of Hayashi et al. The motivation would have been to improve ease of separation between the first and second substrate. It would have been obvious to use a known sequence of device transfer to improve a similar method, by allowing for clean removal of the second substrate from the second substrate in the same way. The combination of prior art elements of a sequence of the stripping of a first substrate and curing an adhesive layer used in a device transfer method would have yielded the predictable result of transferring devices from a second substrate to a first substrate without damaging the devices.

31. Claims 40 and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT Publication No. WO02/084631 as evidenced by corresponding U.S. Patent No. 6,872,635 to Hayashi et al. in view of U.S. Patent No. 5,426,342 to Nakamura et al. and U.S. Patent No. 6,613,610 to Iwafuchi et al. as applied to claims 36, 38-39, 41-43, 45, and 47-51 above, and further in view of U.S. Patent Application Publication No. 2003/0227253 to Seo et al.

32. With respect to claim 40, Hayashi et al. discloses an element transfer method, including using light emitting devices as elements (See paragraph 0170). Nakamura et al. discloses the use of a pressure and heat sensitive adhesive to adhere the elements to a substrate. However, Hayashi et al. and Nakamura et al. do not disclose driving methods.

33. Seo et al. discloses display is carried out through simple matrix driving by impressing a voltage on the devices through the first electric wirings and the second electric wirings (See paragraph 0016). It would have been obvious to one of ordinary skill in the art to combine the driving method of Seo et al. with the element transfer method, disclosed by Hayashi et al. and the pressure sensitive adhesive taught by Nakamura et al. The motivation would have been to cause electroluminescence (Seo et al., See paragraph 0051).

34. As to claim 44, Hayashi et al. discloses an element transfer method, including using light emitting devices as elements (See paragraph 0170). Nakamura et al. discloses the use of a pressure and heat sensitive adhesive to adhere the elements to a substrate. However, Hayashi et al. and Nakamura et al. do not disclose driving methods.

35. Seo et al. discloses display is carried out through simple matrix driving by impressing a voltage on the devices through the first electric wirings and the second electric wirings (See paragraph 0016). It would have been obvious to one of ordinary skill in the art to combine the driving method of Seo et al. with the element transfer method, disclosed by Hayashi et al. and the pressure sensitive adhesive taught by Nakamura et al. The motivation would have been to cause electroluminescence (Seo et al., See paragraph 0051).

36. As to claim 46, Hayashi et al. discloses an element transfer method, including using light emitting devices as elements (See paragraph 0170). Nakamura et al. discloses the use of a pressure and heat sensitive adhesive to adhere the elements to a

substrate. However, Hayashi et al. and Nakamura et al. do not disclose driving methods.

37. Seo et al. discloses display is carried out through active matrix driving by impressing a voltage on the display devices by the driving circuit devices. (See paragraph 0016). It would have been obvious to one of ordinary skill in the art to combine the driving method of Seo et al. with the element transfer method, disclosed by Hayashi et al. and the pressure sensitive adhesive taught by Nakamura et al. The motivation would have been to allow for drive at a low voltage (Seo et al., See paragraph 0052).

38. Claims 36, 38-39, 41-43, 45, and 47-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT Publication No. WO02/084631 as evidenced by corresponding U.S. Patent No. 6,872,635 to Hayashi et al. in view of U.S. Patent No. 5,426,342 to Nakamura et al. and U.S. Patent No. 6,700,185 to Kawai et al.

39. With respect to claim 36, Hayashi et al. discloses embedding a plurality of first devices (8) into a substantially uncured adhesive layer (7) provided on a first substrate (6); embedding a plurality of second devices (3) arranged on a second substrate into a substantially uncured adhesive layer (7) provided on the first substrate (6) by positioning the first and second substrates in close proximity thereof such that the plurality of second devices arranged on the second substrate penetrate the surface of the uncured pressure sensitive adhesive layer (See paragraph 0126); and stripping the plurality of second devices from the first substrate thereby holding the other-side devices in an

embedded states in the uncured adhesive layer (See Figures 1-25) wherein the first devices and second devices are light emitting diodes having different characteristics (See paragraph 0170). Hayashi et al. discloses stripping the second substrate prior to cooling the adhesive to room temperature, when the adhesive is cured completely (See paragraph 0226). However, Hayashi et al. does not specifically disclose using pressure sensitive adhesive or stripping the plurality of second devices from the second substrate while the pressure sensitive adhesive layer is in a substantially uncured state thereby holding the plurality of first and second devices in an embedded state within the uncured pressure sensitive adhesive layer.

40. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

41. Kawai et al. discloses a device adhering method, including it is known in the art of adhesive device transfer as equivalent to harden the enveloping adhesive (7) composition either before or after the temporary substrate (4) has been stripped from the devices (3; column 13, lines 25-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use either equivalent sequence of hardening the layer and stripping the temporary substrate as taught by Kawai et al. in

the method of Hayashi et al. Simple substitution of one known element (hardening the adhesive layer after stripping the temporary substrate taught by Kawai) for another (sequence of steps in Hayashi) would achieve the predictable result of removing devices from the temporary substrate onto the target substrate.

42. As to claim 38, Hayashi et al. discloses the one-side (8) devices and the plurality of first devices (3a) and the plurality of second devices are held in the embedded state in different areas on the substrate (See Figures 1-25).

43. As to claim 39, Hayashi et al. discloses embedding devices (42) arranged on a first substrate (41) into a substantially uncured pressure sensitive adhesive layer (45) provided on a second substrate (43) by positioning the first and second substrates in close proximity thereof such that the devices arranged on the first substrate penetrate the surface of the uncured pressure sensitive adhesive layer, the pressure sensitive adhesive being in a substantially uncured state (See Figures 1-25); wherein the devices are light emitting diodes (See paragraph 0170); stripping the devices from the first substrate thereby holding the devices in an embedded state in the pressure sensitive adhesive layer (See Figures 1-25), and hardening the uncured adhesive layer to cure the pressure sensitive adhesive (See paragraph 0226); forming first electric wirings (46) on the adhesive layer, adhering a third substrate (47) onto a side on which the first electric wirings are formed of the adhesive layer, and stripping the second substrate and the adhesive layer from each other (See Figures 1-25); and providing adhesive layer with openings (65, See Figures 1-25) reaching the devices, filling the openings with a conductive material (49), and forming second electric wirings (63, 64) on the adhesive

layer. Hayashi et al. discloses stripping the first substrate prior to cooling the adhesive to room temperature, when the adhesive is cured completely (See paragraph 0226). However, Hayashi et al. does not specifically disclose using pressure sensitive adhesive or stripping the devices from the first substrate while the pressure sensitive adhesive layer is in a substantially uncured state thereby holding the plurality of first and second devices in an embedded state within the uncured pressure sensitive adhesive layer.

44. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

45. Kawai et al. discloses a device adhering method, including it is known in the art of adhesive device transfer as equivalent to harden the enveloping adhesive (7) composition either before or after the temporary substrate (4) has been stripped from the devices (3; column 13, lines 25-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use either equivalent sequence of hardening the layer and stripping the temporary substrate as taught by Kawai et al. in the method of Hayashi et al. Simple substitution of one known element (hardening the adhesive layer after stripping the temporary substrate taught by Kawai) for another

(sequence of steps in Hayashi) would achieve the predictable result of removing devices from the temporary substrate onto the target substrate.

46. As to claim 41, Hayashi et al. discloses embedding a plurality of first devices (42) arranged on a first substrate (41) into a substantially uncured adhesive layer (45) provided on a second substrate (43) by positioning the first and second substrates in close proximity thereof such that the plurality of first devices arranged on the first substrate penetrate the surface of the uncured pressure sensitive adhesive layer (See Figures 1-25), and stripping the plurality of first devices from the first substrate thereby holding the plurality of first devices in an embedded state in the adhesive layer (See Figures 1-25); further embedding a plurality of second devices arranged on the first substrate into the uncured adhesive layer (See paragraph 0170) by positioning the first and second substrates in close proximity thereof such that the plurality of second devices arranged on the first substrate penetrate the surface of the uncured adhesive layer (See Figures 1-25), and stripping the plurality of second devices from the first substrate thereby holding the plurality of second devices (62) in an embedded state in the adhesive layer (See paragraph 0226); hardening the pressure sensitive adhesive layer to cure the adhesive layer where the plurality of first devices and the plurality of second devices are held in the embedded and cured state within the pressure sensitive adhesive layer (See paragraph 0157); forming first electric wirings on the adhesive layer (46), adhering a third substrate (47) onto the side on which the first electric wirings are formed of the adhesive layer, and stripping the second substrate and the adhesive layer from each other (See Figures 1-25); and providing the adhesive layer with

openings reaching the plurality of first devices or the plurality of second devices, filling the openings with a conductive material (49), and forming second electric wirings on the adhesive layer (63, 64, See Figure 16), wherein the first devices and second devices are light emitting diodes (See paragraph 0170). Hayashi et al. discloses stripping the first substrate prior to cooling the adhesive to room temperature, when the adhesive is cured completely (See paragraph 0226). However, Hayashi et al. does not specifically disclose using pressure sensitive adhesive or stripping the plurality of second devices from the second substrate while the pressure sensitive adhesive layer is in a substantially uncured state thereby holding the plurality of first and second devices in an embedded state within the uncured pressure sensitive adhesive layer.

47. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

48. Kawai et al. discloses a device adhering method, including it is known in the art of adhesive device transfer as equivalent to harden the enveloping adhesive (7) composition either before or after the temporary substrate (4) has been stripped from the devices (3; column 13, lines 25-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use either equivalent sequence of

hardening the layer and stripping the temporary substrate as taught by Kawai et al. in the method of Hayashi et al. Simple substitution of one known element (hardening the adhesive layer after stripping the temporary substrate taught by Kawai) for another (sequence of steps in Hayashi) would achieve the predictable result of removing devices from the temporary substrate onto the target substrate.

49. As to claim 42, Hayashi et al. discloses the plurality of first devices and the plurality of second devices have different characteristics (See paragraph 0170).

50. As to claim 43, Hayashi et al. discloses plurality of first devices and the plurality of second devices are held in the embedded state in different areas on the second substrate (See Figures 1-25).

51. As to claim 45, Hayashi et al. discloses one of the plurality of first devices and the plurality of second devices are any one of display devices and driving circuit devices (see paragraph 0170).

52. As to claim 47, Hayashi et al. discloses bringing the plurality of second devices into contact with a temporary adhesion layer provided on the second substrate for temporarily adhering the other side devices to the temporary adhesion layer thereby arranging the devices on the second substrate, before embedding the plurality of second devices into the uncured adhesive layer provided on the first substrate (See Figures 1-25). However, Hayashi et al. does not disclose using pressure sensitive adhesive.

53. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column

4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

54. As to claim 48, Hayashi et al. discloses a tack of the pressure sensitive adhesive layer provided on the first substrate is greater than a tack of the temporary adhesion layer provided on the second substrate, as shown by the transfer of devices from the temporary adhesion layer to the adhesive layer (See Figures 1-25). However, Hayashi et al. does not disclose using pressure sensitive adhesive.

55. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

56. As to claim 49, Hayashi et al. discloses tack of at least one of the uncured adhesive layer and the temporary adhesion layer is changed so that the tack of the uncured adhesive layer will be greater than the tack of the temporary adhesion layer (i.e. thermally cure; See paragraph 0187). However, Hayashi et al. does not disclose using pressure sensitive adhesive.

57. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

58. As to claim 50, Hayashi et al. discloses curing the uncured adhesive layer using a heating treatment (i.e. thermosetting; See paragraph 0187). However, Hayashi et al. does not disclose using pressure sensitive adhesive.

59. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

60. As to claim 51, Hayashi et al. discloses the adhesive layer is hardened after stripping the devices from the first substrate (i.e. "certainly fixed"; See paragraph 0226). However, Hayashi et al. does not disclose using pressure sensitive adhesive, or the uncured adhesive layer is hardened after stripping the devices.

61. Nakamura et al. discloses a method of manufacturing a fluorescent display device, including using a heat sensitive and pressure sensitive adhesive layer (column 4, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the pressure sensitive adhesive, taught by Nakamura et al., with the element transfer method disclosed by Hayashi et al. The motivation would have been to use an adhesive with good volatility and satisfactory adhesion (Nakamura et al., column 4, lines 45-53).

62. Kawai et al. discloses a device adhering method, including it is known in the art of adhesive device transfer as equivalent to harden the enveloping adhesive (7) composition either before or after the temporary substrate (4) has been stripped from the devices (3; column 13, lines 25-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use either equivalent sequence of hardening the layer and stripping the temporary substrate as taught by Kawai et al. in the method of Hayashi et al. Simple substitution of one known element (hardening the adhesive layer after stripping the temporary substrate taught by Kawai) for another (sequence of steps in Hayashi) would achieve the predictable result of removing devices from the temporary substrate onto the target substrate.

63. Claims 40 and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT Publication No. WO02/084631 as evidenced by corresponding U.S. Patent No. 6,872,635 to Hayashi et al. in view of U.S. Patent No. 5,426,342 to Nakamura et al. and U.S. Patent No. 6,700,185 to Kawai et al. as applied to claims 36, 38-39, 41-43, 45,

and 47-51 above, and further in view of U.S. Patent Application Publication No. 2003/0227253 to Seo et al.

64. With respect to claim 40, Hayashi et al. discloses an element transfer method, including using light emitting devices as elements (See paragraph 0170). Nakamura et al. discloses the use of a pressure and heat sensitive adhesive to adhere the elements to a substrate. However, Hayashi et al. and Nakamura et al. do not disclose driving methods.

65. Seo et al. discloses display is carried out through simple matrix driving by impressing a voltage on the devices through the first electric wirings and the second electric wirings (See paragraph 0016). It would have been obvious to one of ordinary skill in the art to combine the driving method of Seo et al. with the element transfer method, disclosed by Hayashi et al. and the pressure sensitive adhesive taught by Nakamura et al. The motivation would have been to cause electroluminescence (Seo et al., See paragraph 0051).

66. As to claim 44, Hayashi et al. discloses an element transfer method, including using light emitting devices as elements (See paragraph 0170). Nakamura et al. discloses the use of a pressure and heat sensitive adhesive to adhere the elements to a substrate. However, Hayashi et al. and Nakamura et al. do not disclose driving methods.

67. Seo et al. discloses display is carried out through simple matrix driving by impressing a voltage on the devices through the first electric wirings and the second electric wirings (See paragraph 0016). It would have been obvious to one of ordinary

skill in the art to combine the driving method of Seo et al. with the element transfer method, disclosed by Hayashi et al. and the pressure sensitive adhesive taught by Nakamura et al. The motivation would have been to cause electroluminescence (Seo et al., See paragraph 0051).

68. As to claim 46, Hayashi et al. discloses an element transfer method, including using light emitting devices as elements (See paragraph 0170). Nakamura et al. discloses the use of a pressure and heat sensitive adhesive to adhere the elements to a substrate. However, Hayashi et al. and Nakamura et al. do not disclose driving methods.

69. Seo et al. discloses display is carried out through active matrix driving by impressing a voltage on the display devices by the driving circuit devices. (See paragraph 0016). It would have been obvious to one of ordinary skill in the art to combine the driving method of Seo et al. with the element transfer method, disclosed by Hayashi et al. and the pressure sensitive adhesive taught by Nakamura et al. The motivation would have been to allow for drive at a low voltage (Seo et al., See paragraph 0052).

Double Patenting

70. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated

by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

71. Claims 36 and 38-51 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11 of copending Application No. 11/467007('007) in view of PCT Publication No. WO02/084631 as evidenced by corresponding U.S. Patent No. 6,872,635 to Hayashi et al. '007 discloses a similar device transfer method as that of the currently claimed invention. '007 does not specifically disclose first and second devices. Hayashi discloses multicolor devices for producing a display capable of emitting various colors of light. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the different devices taught by Hayashi in the method of '007. The motivation would have been to produce a device capable of emitting various colors of light.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

72. Applicant's arguments filed 01/21/09 have been fully considered but they are not persuasive.

73. In response to applicant's argument that the newly introduced claim language of an "at least substantially" uncured adhesive layer distinguishes over Hayashi, examiner disagrees. Examiner notes it is obvious that the uncured portion of Hayashi is at least substantially uncured (See paragraph 0226), otherwise the transferred device would not be able to penetrate into the adhesive layer as shown in Figures 1-25, especially Figures 10-16 and 23-25. Applicant argues only small portions of Hayashi in figures 2C and 10 are uncured, however, applicant is reminded the specific embodiments of Hayashi are not limiting to the entire disclosure of the reference. The uncured portions of Hayashi are substantially uncured and therefore read on the currently claimed method. Furthermore, the newly added claim language is found to be new matter not previously provided for in the current specification. Consequently, this argument is not persuasive.

74. Applicant has relied on certain passages as specifically disclosing curing the adhesive layer prior to stripping. However, applicant has not addressed paragraph 0226 of Hayashi, cited by examiner for disclosing transferring devices prior to complete curing of the adhesive. While Hayashi also discloses curing the adhesive prior to curing in certain embodiments, these embodiments are not limiting to the entire disclosure of Hayashi. Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442,

169 USPQ 423 (CCPA 1971). See MPEP 2125 [R-5]. For clarification purposes, the following disclosure of Hayashi is relied upon by the examiner as showing stripping the first substrate prior to cooling the adhesive to room temperature, when the adhesive is completely cured:

> "When the thermoplastic adhesive layer 82 is softened, the heating is stopped, to cool and cure the thermoplastic adhesive layer 82, so that the devices 3 are transferred to the transfer substrate 83 via the thermoplastic adhesive layer 82. The transfer substrate 83 is then peeled from the base substrate 1, and the thermoplastic adhesive layer 82 is cooled to room temperature, whereby the devices 3 are certainly fixed to the transfer substrate 83."

75. The disclosure of Hayashi of cooling the adhesive layer to room temperature after stripping the substrate in order to be "certainly fixed" (i.e. hardened) the adhesive layer meets applicant's claimed limitation of stripping the other-side devices from the substrate thereby holding the other-side devices in an embedded state in the uncured adhesive layer (See Hayashi, paragraph 0226). The language used by Hayashi of "the heating is stopped to cool and cure the thermoplastic adhesive" is the purpose of stopping the heating step, and is not an actual description of the curing step. Hayashi specifically discloses cooling the transfer substrate to room temperature after the transferring operation.

76. Furthermore, applicant has not addressed the teachings disclosed in Iwafuchi of curing the adhesive layer after transferring and stripping of the devices. In response to applicant's arguments against the references individually, one cannot show

nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

77. As to applicant's arguments that Hayashi exclusively discloses surface bonding of devices, and does not expressly disclose embedding devices such that they penetrate a substantially uncured adhesive layer, examiner disagrees. Applicant is directed to Figures 1-25 of Hayashi. Specifically, See Figure 10 for embedded devices that penetrate a substantially uncured adhesive during a transfer step. Figure 11 also shows an embedded device in a substantially uncured adhesive layer. Also See Figures 12-16 and 23-25. Applicant is reminded that specific embodiments in Hayashi are not limiting to the entire disclosure of the reference.

78. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., closely positioning during transfer without any additional pressure, or transferring without substrate contact) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). While Hayashi discloses applying during transfer, the currently claimed method does not exclude such a feature. Furthermore, during the press transfer, the two substrates are positioned in close proximity thereof, and read on the currently claimed method.

79. Applicant's remaining arguments are based on the dependency of claims 38, 40, and 42-51 on independent claims 36, 39, and 41. These arguments are not persuasive for the reasons noted above. Consequently, the rejections under 35 U.S.C. 103 over Hayashi in view of various secondary references are maintained.

Conclusion

80. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KIMBERLY K. MCCLELLAND whose telephone number is (571)272-2372. The examiner can normally be reached on 8:00 a.m.-5 p.m. Mon-Thr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip C. Tucker can be reached on (571)272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. K. M./
Examiner, Art Unit 1791

KKM

/Philip C Tucker/
Supervisory Patent Examiner, Art Unit 1791